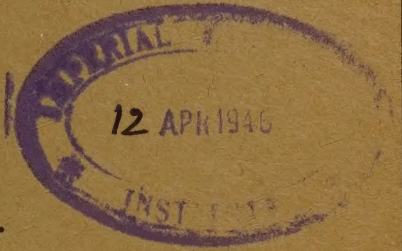




BARBADOS.



ANNUAL REPORT

OF THE

Department Of Science and Agriculture

FOR THE YEAR

1944—45

Printed by the Advocate Co., Ltd.
Printers to the Government of Barbados.

REPORT ON THE WORK OF THE DEPARTMENT OF SCIENCE AND AGRICULTURE

For the Year Ending the 31st March, 1945.

TABLE OF CONTENTS

	Page
1. Weather and Crop Production	3
2. Sugar	3
3. Cotton	6
4. Minor Crops	6
5. Wartime Food Production	7
6. Afforestation Scheme	8
7. Soil Erosion Control Experiments	8
8. Peasant Agriculture	9
9. Chemical Investigations	10
10. Insect Pests	14
11. Plant Diseases Inspection	16
12. Fisheries	16
13. Agricultural Legislation	17

STAFF.

Dr. S. J. Saint, Director of Agriculture, who also performs the duties of Controller of Supplies, left the colony on the 14th of June, 1944, to attend a meeting of West Indian Supply Officers at New York as the representative of Barbados. Dr. Saint also visited Canada. He resumed duty on the 19th of July. Dr. A. E. S. McIntosh, Deputy Director of Agriculture, acted as Director of Agriculture.

Dr. A. E. S. McIntosh, Deputy Director of Agriculture, and Geneticist of the B.W.I. Central Sugar Cane Breeding Station, was granted duty leave in July 1944 to visit British Guiana in connection with a proposal that British Guiana should become a contributing colony to the B.W.I. Central Sugar Cane Breeding Station.

Dr. A. E. S. McIntosh left Barbados for England on the 19th January, 1945, on six months' vacation leave.

Mr. R. W. E. Tucker, M.A., B.Ed., Entomologist, who had been granted five months and twenty-six days vacation leave in Canada, resumed duty on the 10th of May, 1944.

Mr. Victor A. A. Archer, B.S.A., M.S.A., F.C.I.C., Science Master of the Boys' Secondary School of Grenada, was selected to fill the vacant post of Lecturer in Botany, Chemistry and Physics created by the resignation of Mr. J. A. Allan, B.Sc. He resumed duty on the 18th of September, 1944.

Mr. G. A. Southwell, D.I.C.T.A., Agricultural Assistant, B.W.I. Central Sugar Cane Breeding Station, left the colony in July, 1944, on secondment to the Department of Agriculture, British Honduras.

Mr. W. St. Hill, Entomological Assistant, resigned his post on the 4th of October, 1944, to take up an appointment at the Curacao Oil Company. Mr. W. Headley, Field Assistant, was appointed to succeed him and Mr. V. James to fill the vacant post of Field Assistant.

I. WEATHER AND CROP PRODUCTION.

Rainfall throughout the year totalled 69.33 inches; which was 11.94 inches above the total fall for the previous year. The weather during the four months January—April was dry, the average monthly precipitation being 1.42 inches; this dry spell was broken during the month of May with an average fall of 6.64 inches. The total rainfall for the period July to December 1944 was 13.35 inches greater than in 1943, and the peak rainfall of 12.00 inches occurred in July, 1944.

2. Distribution of rain for the island as a whole was much more regular and satisfactory than in 1943. This, in conjunction with the renewed application of fertilisers and the large acreage under new high yielding varieties justified the original estimate of a crop of approximately 140,000 tons of sugar. Unfortunately the delay in harvesting the crop, due to unsettled labour conditions plus the loss incurred by the large acreage which was burnt, a certain percentage of which could not be harvested, has caused the original estimate of 140,000 tons to be reduced to 120,000 tons. The acreage under plantation cane in 1944 was 175 acres greater than in 1943.

3. Improved shipping conditions resulted in the lifting of most of the 1944 production of fancy molasses by the end of 1944. The Fancy Molasses Control and Marketing Board has allocated some 60,000 puncheons for production during 1945.

4. From results so far obtained, it is already evident that contour drainage will increase the yield of sugar cane and prevent soil erosion. It is proposed to stage large scale demonstrations so that this method of cultivation will become generally adopted as soon as possible.

5. Yields of ground provisions were good in the large majority of districts of the Island. The yield of cotton did not come up to expectations as the majority of growers failed to control effectively the attacks of the leaf defoliator (*Alabama argillacea*) by spraying with insecticides.

II. SUGAR.

6. The 1944 sugar crop amounted to the equivalent of 104,502 tons of sugar made up as follows:—

Vacuum Pan Factories	....	82,819 tons
Muscovado	....	1,508 „
Fancy Molasses	....	20,175 „
		104,502 „

7. The crop to be reaped in 1945 is estimated at 118,000 tons.

8. The position with regard to local consumption of sugar and exports of sugar and fancy molasses during the quota year 1943—1944 may be summarised as follows:—

<i>Estimated stocks in hand for export at</i>				
<i>1st September, 1943:</i>				<i>Tons.</i>
Fancy Molasses	....	....	9,699 tons	
Sugar	....	....	69,232 „	78,981
<i>Production: Crop 1944</i>				104,502
				183,483

<i>Estimated stocks in hand for export at</i>				
<i>1st September, 1944:</i>				
Fancy Molasses	....	....	9,363 tons	
Sugar	....	....	45,360 „	54,723
				128,760

*Total export for quota year 1943/44 as per
Customs returns:*

Fancy Molasses	....	....	18,993 tons	
Sugar	....	....	104,298 „	123,291
				5,469

Difference representing sugar left in the Island for local consumption.

9. It will be noted that the amount of sugar produced during 1944 for local consumption is estimated at only 5,469 tons. The production for local consumption during the previous year was estimated at 13,479 tons which is in excess of our normal annual consumption. This resulted in a carry-over of local consumption sugars and a reduced production in 1944.

10. Owing to improved shipping conditions most of the fancy molasses which was produced during 1944 for export was moved by the end of that year. The Fancy Molasses Control and Marketing Board has allocated some 60,000 puncheons during 1945 for production for export. Of this quantity about 39,000 puncheons were allocated to small fancy molasses plants and the remainder to larger vacuum pan factories. It is anticipated that all of this molasses will be shipped by the end of 1945.

11. The returns received from plantations under the Sugar Cane Census Act for the 1945 crop show that there were 29,971 acres under cane made up of 14,551 acres of plant canes, 9,745 acres of first ratoons, 4,756 acres of second ratoons, 866 acres of third ratoons, 52 acres of fourth ratoons and one acre of fifth ratoons. In addition the acreage of cane estimated to be reaped by small holders is 7,000 acres, making a total of 36,971 acres as compared with 36,796 acres harvested the previous season.

12. A comparison of plant cane and ratoon figures with 1944 shows that there was an increase of 407 acres of plant canes and a decrease of approximately 232 acres in ratoons of all kinds.

13. The percentages of the total acreage under the various varieties to be reaped in 1945 are as follow :—

B.37161	B.35187	B.34104	B.3439	B.H.10(12)	B.726	B.2935	B.35245	B.3013	Other and mixed varieties
%	%	%	%	%	%	%	%	%	%
62.65	10.19	7.46	4.89	4.76	2.95	1.94	1.60	1.38	2.18

The acreage under B.37161 has still further increased over the previous year. The new seedling varieties, B.37161, B.35187, B.35245, B.3439 and B.34104 occupied 86.79 per cent of the acreage reaped by plantations.

14. The yields of all varieties at the beginning of the 1945 harvest were much better than those for the 1944 crop. This increase was due to the higher and better distribution of rain during the growing season, the increased acreage under the new seedlings and the renewed application of fertilisers, especially sulphate of ammonia, both at the correct time and in adequate amounts.

15. *Breeding.* The policy of increasing the variability of seedling material by inter-generic crosses has been continued with very encouraging results. During the 1944 season, 112 crosses were made, and seedlings were obtained from 102 of these. It is estimated that approximately 155,000 seedlings germinated and 28,388 of these were potted.

16. *Sugar Cane Seedling Trials.* The Select Seedling Trials reaped during the 1945 crop indicated that of the B.41' Series, B.41211 and B.41227 showed some promise of becoming commercial canes under Barbados conditions. Of the B.40' Series, B.4098 enhanced its reputation as a high yielding cane with very good juice qualities both as plant canes and first ratoons particularly in the high and intermediate rainfall areas. B.40105 was very disappointing in ratoon trials, and on this account is unlikely to become a commercial cane.

17. *Mosaic Disease Resistance Tests.* Experiments using the Sein Method of artificial inoculation were continued with the object of evolving a fool-proof technique. Plants were exposed to conditions of high humidity for varying periods ranging from 24 to 96 hours, inoculated, and allowed to remain for similar periods under the same conditions. Preliminary experiments seem to indicate that 24 hours of high humidity before and after inoculation give the best results. The results obtained with the new technique were on the whole very encouraging.

18. Selections of the B.41' Series which did not take the disease in the previous year, were inoculated by using the new technique, and a further three of these seedlings were found to be susceptible to mosaic, making a total of 10 out of the 22 seedlings susceptible to the particular strain or strains of the virus carried by the B.2935 and B.34104 material used.

III. COTTON.

19. The acreage under cotton for this season was $324\frac{1}{2}$ acres of which $56\frac{1}{2}$ acres were grown by plantations and 268 acres by peasants. The acreage for the previous season was 905 acres. The total yield of seed cotton was 89,608 lb., made up of 26,335 lb. of plantation cotton and 63,273 lb., from peasants. The average yield per acre for plantation and peasants' cotton was 466 lb., and 236 lb., respectively. The average yield per acre for all plantings was 276 lb. The ginning percentage for the Island's crop as recorded by the Barbados Co-operative Cotton Factory was 25.9.

20. *Progeny Plot Selections.* Work was continued during the season with selfed seed obtained from 13 plants selected from the progeny plots during the 1943-44 season and the standard variety B.1.

21. The selfed seed of the bulked cotton from 11 of the 13 selections of the 1943-44 plots was grown at Codrington Experiment Station in a variety trial with B.1 as a Standard. Five of these have been selected on yield of seed cotton per acre and ginning out-turn and will be grown in a further variety trial next season; they are B.4301, B.4306, B.4308, B.4309 and B.4310.

22. A second variety trial was conducted at Codrington Experiment Station which included selections of the 'B.40', 'B.41' and 'B.42' Series with B.1 as standard. Four of the varieties have been retained, viz:—B.4001, B.4111, B.4204 and B.4212. These strains will be included in a variety trial next season with the selections of the 'B.43' Series and the standard B.1.

23. A sample of lint of the island crop was sent to the Shirley Institute for a small scale spinning test.

IV. MINOR CROPS.

24. *Fruit Trees.* The propagation and distribution of economic fruit trees was continued during the year under review. A total of 854 trees were distributed and 25 young mango trees were top-worked. Of the trees distributed 751 were budded citrus, chiefly limes, oranges and grape-fruit, and the remainder were made up of budded avocado pears, guava, sugar apple, pawpaw, seedling Barbados—Cherry and rooted cuttings of fig, grape, breadfruit and golden apple. In addition 1,207 dwarf coconuts were imported from St. Lucia, germinated and distributed.

25. *Garden Vegetables.* The following were tested on a small scale in the vegetable garden at Codrington Experiment Station:—

Mauritius cauliflower (*Alger-Lenermand*), Lettuce (Great Lakes), Cape Goosberry (*Physalis Peruviana*) received through the Office of the Inspector General of Agriculture. Snap Bean (Florida Belle) received from the Florida Agricultural Experiment Station. Soya Beans (Clemson and Creole) received from the United States Department of Agriculture. Tomatoes (Stemless Penn Orange, Stemless Penn Red and Penn Heart) received from the Department of Horticulture, the Pennsylvania State College. Cluster Bean (*Cyamopsis psoralioides*) Bonavist—four varieties—received from the Department of Agri-

culture Jamaica. Cabbage (Steins Early Flat Dutch, Hastings Sure Crop and Copenhagen Market) from H. G. Hastings & Co., Atlanta, Georgia.

26. Bulletin No. 2 (New Series) "The Culture of Garden Vegetables in Barbados" was prepared and published.

27. *Field Crops*: (a) *Indian Corn*. Seed from the previous season ear to row trials was sown at the Agricultural Station at The Home and further mass selection carried out. Two samples of seed, one from Jamaica and the other from Hawaii, were multiplied prior to selection and further testing. The seed from Hawaii was developed by combining inbred lines from many crosses involving several tropical and subtropical strains. The material is therefore highly variable and should prove valuable for selection.

(b) *Pigeon Peas*: Forty two local and eight imported strains were sown in observation-plots. From this planting eleven local and four imported strains have been selected for further testing.

(c) *Guinea Corn*: Six varieties imported from the Department of Agriculture, Jamaica were sown for multiplication and observation, but owing to a severe attack of the sorghum midge (*Contarinia sorghicola*) it was impossible to obtain any seed from the sowings.

(d) *Hill Rice*: Trial sowings of 16 varieties of Hill Rice obtained from Jamaica were a complete failure due to chlorosis.

(e) *Cow Peas*: Twelve varieties from Jamaica were multiplied for testing against the local Blackeye and Rounceval peas.

(f) *Gram* (*Phaseolus aureus* and *P. mungo*): Eight varieties from Jamaica were sown in observation-plots together with the local Woolly Pyrol. Four of the varieties have been provisionally selected as possible fodder crops.

(g) *Perennial Kavironda Sorghum*: The results of trials which have so far been completed, have not shown this fodder crop to be any better than the local guinea corn. In view however of the promising results which have been obtained in Jamaica and British Guiana it is intended to carry out further trials.

(h) *Lucerne*: A small sowing of the variety Hairy Peruvian was made.

V. WARTIME FOOD PRODUCTION.

28. *Food Crops*: As in previous war years, the acreage of food crops grown was regulated by Notice served under the Local Food Production (Defence) Control Order, 1942, No. 2.

29. During 1944-45, owners were required to plant the same acreage of food crops as during the previous two years, viz:—a minimum of thirty-five per cent of their arable acreage, of which at least twelve per cent of the total acreage had to be 'thrown-out' land. More corn and sweet potatoes were grown in 'preparation' land than in the previous year. In 'thrown-out' land sweet

potatoes were increased to fifty per cent of the total acreage, cassava remained at thirty per cent, while a wide range of food crops could be grown in the remaining twenty per cent of the 'thrown out' land.

30. Weather conditions were favourable for food crop growth but planting was delayed and, in many cases, not carried out as a result of an island wide shortage of agricultural labour. Most planters were unable to take advantage of good early rains which, in years of normal labour conditions, would have resulted in an early and increased local production of food.

31. The Government Factory at Lancaster worked from the 15th May to about the middle of October and processed 26,122 bags of cassava and 1,162 bags of potato meal into a food for livestock consumption.

32. *Local Meat Production*: Under Defence Regulations, strictures continued to be placed on the slaughter of young and breeding stock. All owners of plantations were required to keep a certain prescribed minimum of livestock of specified kinds.

33. In February, 1945, the restrictions on the slaughter of cattle, sheep and goats were removed as it was considered that owing to the livestock policy adopted the numbers of these animals had increased appreciably. Owing to the world shortage of dairy products it was thought desirable to make the milk which would be consumed under the prevailing regulations by inferior calves available for human consumption.

34. The restrictions on the slaughter of breeding sows and young pigs were not removed as there continues to be a shortage of pigs for slaughter. It is considered that this shortage is due to the considerably increased cost of rearing pigs owing to the existing high prices of livestock feed and to the difficulty of obtaining supplies of concentrated foods.

35. *Rex Rabbits*: During the year the distribution of these rabbits from the breeding unit at Codrington Experiment Station was commenced and up to the present a total of 33 have been distributed. The success of this breed of rabbits under tropical conditions is considered to be doubtful.

VI. AFFORESTATION SCHEME.

36. The free distribution of young casuarina trees was continued and a total of 4,967 trees was distributed during the period under review.

VII. SOIL EROSION.

37. With financial aid from Colonial Development and Welfare funds (Schemes D 50 and D 13R) experiments were laid down to find suitable ways of preventing soil erosion and reclaiming ruinate areas.

38. *Reclamation of Badly Eroded Areas*: A good cover has now been established on the hillside at Haggatts, St. Andrew, which was planted in June and July, 1942. During the period under review, inspections were made to note the growth of the various tree species. Photographs were taken in August, 1944.

39. *Treatment of Simi-denuded Sour Grass Pasture on a Steep Slope:* A satisfactory "take" of seedling trees planted on the steeply sloping sour grass pasture at Parks, St. Andrew can be recorded. Supplies were planted in June, 1944.

40. *Prevention of Soil Erosion on Arable Land:* With the co-operation of the estates concerned, contour drains were made on three fields at Bath Plantation and on one field at Edgumbe Plantation in 1942.

41. On all fields which have been contour drained, the yield of cane in 1944 has been excellent and soil wash negligible. It is evident that the contour drains conserve both soil and moisture, and the results of moisture conservation on the yield of cane have been most marked.

42. In the landslip areas of the Scotland District, it was felt that contour drains, by holding water, might increase the tendency to slip. If such was the case, it would be necessary to compromise between prevention of soil wash and prevention of slip by arranging drains on a herring-bone pattern. However, the contoured fields at Bath withstood a very heavy wet season in 1944, including 8" in one night, and no slip occurred. Khus Khus grass planted on the drain edge helped to prevent silting.

43. Owing to the excellent results which have been obtained in soil erosion control and in order to encourage the laying out of contour drains by planters and peasants, a striding level—strong, cheap and easy to make—has been evolved. This has been used to lay out further demonstrations of contour work at Groves, St. George, and Blowers, St. James.

VIII. PEASANT AGRICULTURE.

44. *District Agricultural Stations:* During the period under review, six small holdings were purchased for the establishment of district agricultural stations, under the Colonial Development and Welfare Scheme as follows:—

Sayer's Court in Below Rock, Christ Church.

The Home, near Rices, St. Philip.

Groves, St. George.

Bullens, near Paynes Bay, St. James.

Jerusalem, near Mile & a Quarter, St. Peter.

Haggatts, St. Andrew.

45. The repair of dwelling houses has been effected at Sayer's Court, The Home and Groves. At these stations, livestock pens have been erected and stocked. At Jerusalem, the house for the instructor is nearly completed, while the livestock pens have been erected and stocked. At Bullens and Haggatts, the dwellings are under construction.

46. Each station is under the immediate care of a Peasants' Agricultural Instructor. The Stations will be stocked with stud animals to improve the

peasant livestock and will be used to demonstrate methods of increasing the productivity of the land. Vegetable gardens will be maintained at each station.

47. *Educational and Advisory*: Lectures and demonstrations were given at Elementary schools in peasants' holdings and at the agricultural stations. The subjects dealt with included mixed farming, animal husbandry, green vegetable gardening, soil conservation, crop costing, control of plant pests and diseases and the care and management of fruit trees.

48. *Survey*: A preliminary survey of peasant holdings was carried out by the Peasants' Agricultural Instructors to determine the number, size, name of occupier and facilities for irrigation. It was found that there were 19,657 peasant holdings of which 93.2 per cent are holdings of under two acres in size. Estate renters number 7,963 of which 99.9 per cent are holdings of below two acres.

49. *General*: Four competitions were held under the auspices of the Department as follows:—

(a) Peasants' Holding Competition ....	....	12 prizes
(b) „ Vegetable Garden Competition	51	„
(c) „ Cotton Plot Competition	8	„
(d) School Vegetable Garden Competition	8	„

Competition was very keen, especially amongst the vegetable gardeners and it is evident that the standard of peasant agriculture continues to improve.

50. *Peasants' Loan Bank*: Loans amounting to £3,567 have been issued to 457 persons for the payment of mortgages, purchase of livestock, irrigation and cultivation expenses.

51. Of the total loans made, the sum of £2,638 was advanced to 378 persons for cultivation expenses of 604 acres, of which 300 acres were in canes and 304 acres in cotton and food crops.

IX. CHEMICAL INVESTIGATIONS.

Manurial Trials:

52. (a) *Sweet Potatoes*: The sweet potato manurial trial, carried out on the same site at Codrington Experimental Station from June 1941 to March 1944 has been discontinued. The results of these experiments will be published in Bulletin form.

(b) *Cassava*: Trials laid down at four estates, representative of the different soil-rainfall types, were reaped in 1944. The treatments were:—

(1) Control.

(2) 1 cwt. Sulphate of ammonia + $\frac{1}{2}$ cwt. Muriate of potash per acre.

(3) 2 cwt. Sulphate of ammonia + 1 cwt. Muriate of potash per acre.

(4) 1 cwt. Muriate of potash per acre.

At three estates, the manures failed to increase the yield of cassava. Increases recorded at the fourth estate for treatments (2) and (3) were statistically but not economically significant.

(c) *Yams*: Three yam manurial trials were reaped during the period under consideration.

(i) At Codrington Experimental Station, the following treatments were included in a 6 x 6 Latin Square:—

- (1) Control.
- (2) Pen manure (1 basket of 35 lb. per plant).
- (3) 3 cwt. Sulphate of ammonia + 1 cwt. Superphosphate + $1\frac{1}{2}$ cwt. Muriate of potash per acre. (equivalent to treatment 2 in terms of N. P. and K.).
- (4) 1 cwt. Muriate of potash per acre.
- (5) 2 cwt. Sulphate of ammonia + 1 cwt. Muriate of potash per acre.
- (6) 2 cwt. Sulphate of ammonia + 1 cwt. Superphosphate + 1 cwt. Muriate of potash per acre.

Although the manures failed to cause an increase in yield, the results showed the importance of tilth and drainage in yam production.

(ii) Experiments designed to show the effect of pen manure on the yield of yams were carried out at 'The Home' and 'Sayer's Court' District Agricultural Stations. At 'Sayer's Court', where the land was in excellent tilth after being 'thrown out', pen manure applied at the rate of 1 basket (40 lb.) per plant caused an increase of almost 1 ton of yams per acre. At 'The Home', where tilth was poor, no such increase was recorded.

(d) *Corn*: The results of experiments at 'The Home' and 'Sayer's Court' show that 2 cwt. of Sulphate of ammonia per acre caused a large and economic increase in the yield of corn. The inclusion of Potash in the fertiliser did not result in further increase. The experimental treatments were:—

- O. Control.
- N. 2 cwt. Sulphate of ammonia per acre.
- K. 1 cwt. Muriate of potash per acre.
- NK. 2 cwt. Sulphate of ammonia + 1 cwt. Muriate of potash per acre.

(e) *Cotton*: The cotton manurial trial, carried out on soil in 'good heart' and recorded in Barbados Agricultural Journal Vol. 8, No. 1, was re-

peated at two stations where the soil is 'run down'. The following treatments were under investigation:—

- O. Control.
- N. 2 cwt. Sulphate of ammonia per acre.
- NK. 2 cwt. Sulphate of ammonia + 1 cwt. Muriate of potash per acre.
- NPK. 2 cwt. Sulphate of ammonia + 1 cwt. Muriate of potash + 1 cwt. Superphosphate per acre.

2 cwt. per acre of Sulphate of ammonia caused the worthwhile increases of 183 lb. and 123 lb. seed cotton per acre at the two stations. Potash alone, and in combination with phosphate, failed to cause further increase in yield. These findings are in full agreement with those of the previously recorded experiment.

Future experiments will be carried out to determine the economic level of nitrogenous manuring.

(f) *Sugar Cane*: High yielding new varieties of sugar cane—in particular B.37161 and B.34104—make quicker initial and total growth than the predominant varieties of former years. It is possible, therefore, that B.37161 and B.34104 will respond economically to heavier manurial applications than those at present recommended. To elucidate this point, trials have been started at six centres (3 black soil, 2 red soil, 1 Valley soil), the treatments under consideration being:—

- (1) Control.
- (2) Old recommendation.
- (3) Old recommendation + 1 cwt. Sulphate of ammonia per acre.
- (4) Old recommendation + 2 cwt. Sulphate of ammonia per acre.

The three varieties B.37161, B.34104 and one old time variety (B.H.10(12), B.2935 B.726) are included in a 3 x 3 Latin Square. Each varietal plot is subdivided into four sub-plots for manurial treatment.

A similar trial, of slightly different layout, has been started on a deep Scotland series soil at Greenland, St. Andrew.

(g) *Sour Grass*: The trials at Gun Hill and Seawell have been continued. These trials are designed to show the influence on yield of a reduction of the proportion of phosphate and potash in the mixture:—

2 Sulphate of ammonia: $\frac{1}{2}$ Superphosphate: $\frac{1}{2}$ Muriate of potash.

53. *Government Factory*: This factory was operated during the year greatly improved efficiency. A production of 12—14 tons per day of dried ground meal was maintained. A total of 1,218 tons of feeding stuffs was produced comprising 26,122 bags of cassava meal and 1,162 bags potato flour.

These meals were used to supply part of the carbohydrate portion of the Balanced Animal Foods which were mixed from the available feeding stuffs and supplied to stock owners. The feeds manufactured at the Factory have contributed substantially to the maintenance of the local live stock under the prevailing difficult supply conditions.

54. *Megass-Molasses Fuel*: The production of charmol at Searles Factory was continued. To date approximately 500 tons of this product have been supplied to bakeries in Bridgetown when wood was difficult to obtain. The demand for, and the rising price of molasses, have militated against the expansion of the process.

55. *Quicklime*: The continuous shaft kiln at Apes Hill, burning natural gas maintained a steady production of high grade quicklime for use in cane juice clarification at sugar factories. In this connection some 300 tons were supplied to the various factories throughout the crop. The island may now be considered independent of external sources for this commodity.

56. *Pottery*: The experimental Pottery kiln at Turner's Hall was taken over by Messrs. Barbados Welfare Ltd., and continued to produce commercial articles chiefly for export to other colonies. A new and larger kiln has also been constructed. The service of an experienced Potter from abroad is being acquired to assist in this development work.

57. *Salt Production*: Advice and assistance were given to Messrs. Barbados Welfare Ltd. in connection with the development of a Salt Industry by solar evaporation which is being established in the parish of St. Lucy. Difficulty in acquiring some necessary equipment, coupled with labour difficulties have somewhat slowed down the progress of this undertaking.

58. *General Analytical Work*: The total number of samples analysed during the year as well as the numbers and distribution for the past three years are summarised as follows:—

(i) General Analytical Laboratory:		1942	1943	1944
1. Police Department ....	....	416	412	350
2. Customs Department ....	....	53	46	54
3. Water Works Department ....	....	23	12	8
4. Agricultural Department ....	....	12	110	316
5. Sanitary & Parochial Depts. ....	....	145	265	371
6. Agricultural Society ....	....	116	33	62
7. Other Govt. Departments ....	....	24	39	76
8. Private ....	....	153	112	140
		942	1,029	1,377
(ii) Sugar Laboratory		41,418	52,757	39,225
Total		42,360	53,786	40,602

X. INSECT PEST CONTROL.

59. *Sugar Cane*: Control over the moth borer *Diatraea saccharalis* was maintained during the year under review by the distribution to planters of a total of 284,963,000 of the egg parasites *Trichogramma minutum*. To obtain this number for distribution a total of 325,672,000 was reared.

60. The extent of moth borer infestation was determined by random samples taken from the usual twelve factories well distributed over the island, and the results show the maintenance of a satisfactorily low infestation by moth borer.

61. The average of infestations recorded was 11.4 per cent. cane joints damaged by moth borer; the lowest figure being 6.8 per cent. average for the variety B.34104 and the highest 14.9 per cent. average for B.35187. Other varieties examined were B.37161, B.3439, B.H.10(12) and B.726.

62. Records were maintained on the relation between rind hardness of cane and incidence of moth borer attack; also on the incidence of *D. saccharalis* egg deposition in different cane varieties, and on the incidence of cane dead hearts in the young crop.

63. Factory examinations of ripe cane showed an increase in damage due to the cane stem weevil. *Metamasius sericeus* and to the termite *Nasutitermes costalis*. Field examinations showed that these pests were breeding up in refuse cane which was left in the field instead of being removed within a reasonable period of reaping the cane.

64. Damage to the cane crop by the beetles *Diaprepes abbreviatus* and *Lachnosterna (clemora) smithi* is also on the increase and young ratoons in some areas of the island are showing a noticeable increase in visible damage by these pests. The number of *D. abbreviatus* (root borer) reported collected this year was 121,400 and of *L. (clemora) smithi* (brown hard back) was 980,500, but numbers recorded as collected are no longer an indication of the prevalence of, or control over, these pests. In previous years, the totals of collections ran into several millions per annum.

65. The control of cane stem weevil, root borer, brown hard back and of termites is entirely one of estate cultural procedure and management and the increase in damage recorded is mainly due to war time economic and labour difficulties.

66. The firefly beetle *Pyrophorus luminosus* which was introduced from Puerto Rico in 1932—33 as a control over *L. (clemora) smithi* can still be found in the hillier regions.

67. *Food Crops*: There was a general decrease in the insect pests of sweet potato, corn and cassava during the year under review; an increase in spraying or in the use of selected pest-free planting material may have contributed to this.

68. The defoliation experiments in blocks of randomised plots of sweet potatoes was repeated, and the results fully confirm those reported last year.

Two defoliation at 5 weeks and 8 weeks growth respectively reduced the yield to 24 per cent. of the control or normal yield; two defoliation at 8 weeks and 12 weeks respectively reduced the yield to 35 per cent. of normal; one defoliation at 12 weeks, which was 3 weeks before reaping, reduced the yield to 95 per cent. of normal yield. This is further evidence by field plot methods of the preventible loss to food crops caused by defoliators.

69. No work was carried out this year on loss caused by and field control of sweet potato scarabee (*Euscepes postfaciatus*) as it is considered that full proof of economic control by spraying and cultural methods has been obtained over a period of seven consecutive years, and that the matter of effective control now rests with the growers.

70. *Demonstration Cases:* Twelve portable cases of insect pests of sugar cane, food crops and cotton were prepared and issued to the Peasant Agricultural Instructors to assist them in their work of identifying and demonstrating control over various insect pests.

71. *Storage of Seed Corn:* Two series of laboratory tests were carried out using 1 per cent. and 2 per cent. by weight of local radiolaria earth, a silica dust, as a control over grain weevils. The 1 per cent. dust greatly slowed down and reduced infestation but did not completely control it. The 2 per cent. dust gave complete control but it would appear cheaper to import a standardised commercial material such as "Fygran".

72. *Control of House Flies:* Laboratory cage experiments with a small sample of D.D.T. were carried out, and the results agreed with numerous published accounts. Supplies of D.D.T. and of Gesarol and Neocid for larger scale work have been ordered.

73. A long period test using a standard sodium arsenite and sugar bait was carried out with satisfactory results against house flies at one of the new Departmental Agricultural Stations.

74. *Cotton Pests:* For the sixth year in succession no pink bollworm (*Platyedra gossypiella*) was found, and cotton defoliator (*Alabama argillacea*) was in some cases kept under fair control by spraying with lead arsenate.

75. *Cottony Cushion Scale:* This pest (*Icerya purchasi*) has appeared in numbers in a few localities. The introduced predator (*Rodolia cardinalis*) is fortunately still present in the Island and overtakes most of the infestations.

76. *Wood Ant Control:* The Wood Ant Inspector has been kept fully occupied during the year under review inspecting and applying remedies against termites in Churches, Government Buildings and private residences. There are as yet no accepted or compulsory measures for rendering new residences and buildings termite proof at the time of erection.

77. *Control of Rats in Canefields:* Many planters record an increase in damage to cane due to rats. Zinc phosphide was therefore imported for use by the Agricultural Society in place of Strychnine which had to be used in baits last year in place of Thallium sulphate which was unobtainable due to the war.

XI. PLANT DISEASES INSPECTION.

78. One hundred and ninety-one (191) separate consignments of imported planting material were examined on arrival and admitted. Twelve (12) Coconut plants were destroyed as well as a package of plants from South America. Ten (10) bales of stained cotton lint were examined and as no pests of cotton were found, they were admitted for local consumption. No shipments of cotton seed arrived in the colony during the year and the barge on which the Simon's Heater is erected was dismantled; this is the property of the Barbados Co-operative Cotton Factory Limited. One shipment of cotton seed meal was examined for the presence of Mexican Boll Weevil and none was found; several other items were examined for the presence of raw cotton.

79. During the year the consolidated and amended Sugar Cane Mosaic Disease (Eradication) Act, 1943, was in operation and returns of inspections were received from several estates, but the submission of returns has not become universal. It was found necessary to proclaim the tenancies of Hillaby, Shop Hill and Rock Hall, St. Andrew, as Infected Areas under the abovementioned Act and these areas were supplied with healthy planting material (B.37161) through the Department.

XII. FISHERIES.

80. Subsequent to the appointment of a Fishery Officer the Governor was pleased to appoint an Advisory Committee, to advise on fishery matters, under the Chairmanship of the Director of Agriculture.

81. During the year under review 225 inspections were carried out by the Fishery Officer and loans totalling \$12,239 have been sanctioned by the Fishery Committee for the repair and construction of boats. Repayments for the same period total \$4,035. A further sum of £2,500 was made available by the Government to enable the Committee to undertake further loans.

82. Thirty new deep-sea fishing boats have been constructed during the year, twenty-four of which received assistance through loans.

83. Due to heavy seas of 16th and 17th of August, 1944, particularly on the Southern and Leeward Coasts, five boats were completely wrecked and nine others damaged in varying degrees. In addition, fourteen other boats were lost at sea by sinkings during the year.

84. A scheme seeking financial assistance for the erection of a Bridgetown fish market has been submitted to the Comptroller of Colonial Development and Welfare. This scheme has been accepted on a three year plan by the Comptroller and the Legislature and has been referred to the Secretary of State for the Colonies for final approval.

85. During the hurricane season when the sea is normally calm blasting operations of an experimental nature were carried out by the Fishery Officer at Conset's Channel off St. John and Megs Channel off the Crane with a view to improving the navigability of these channels. These operations have been to a great extent successful, and a further scheme seeking financial assistance

to carry out blasting at other channels on the Windward Coast has been submitted and is under consideration.

86. A draft Bill dealing with the general control of the fishing industry has been submitted by the Committee to the Government.

87. A comprehensive scheme for the general improvement and development of the fishing industry is being drawn up and with the approval of the Government it is hoped that financial assistance will be made available under the Colonial Development and Welfare Act.

XIII. AGRICULTURAL LEGISLATION.

88. 29th January, 1945, Sugar Cane Mosaic Disease (Eradication) (Pensions) Act, 1945. An Act to make pensionable, with retrospective effect, the service of persons employed as Sub-Inspectors in connection with the eradication of the Mosaic Disease of Sugar Cane or Grasses.

S. J. SAINT,

Director of Agriculture.

